OPTIMIZING POSTGRESQL FOR A MAJOR PRIVATE SECTOR BANK: FROM 12-HOUR RESTARTS TO A FEW SECONDS AND 30 TB OF STORAGE SAVED

Database management plays a crucial role in ensuring smooth and efficient operations within an organization. Well-optimized databases facilitate quicker transactions, reliable data access, and overall system stability. This case study illustrates how specialized expertise can enhance database performance and address complex issues, as demonstrated by Ahana's work with a banking client's PostgreSQL server.

Client Profile

Our client, a prominent private sector bank, is classified as an A-Class Scheduled Commercial Bank in India. They provide a comprehensive suite of banking services, offering a complete package for all banking requirements.

The Challenge

The client encountered several performance-related issues with their PostgreSQL server:

- **Server Performance**: The PostgreSQL server required fine-tuning of critical configuration parameters for optimal performance.
- **Storage and Startup Time**: Inactive replication channels held up approximately 30 TB of data, resulting in extended server startup times of over 12 hours.
- **Missing Indexes**: The absence of necessary indexes slowed down query performance and data optimization, raising concerns about potential disruptions to the Kafka data pipeline.
- **Query Performance**: The converted PostgreSQL queries required significant optimization to match or exceed the performance of the previous Oracle system.

Ahana's Solution

To address these issues, Ahana Systems implemented the following solutions:

PostgreSQL Server Level Tuning:

- Allocated memory to the PostgreSQL configuration as per best practices.
- Enabled housekeeping and monitoring to capture critical performance metrics.
- Tuned configuration parameters and upgraded the PostgreSQL server to version 14.8.
- Adjusted pgpool configuration to enhance connection pooling and concurrency.

Storage Reduction and Server Startup Time:

- Identified and removed 10 inactive replication channels, freeing up 30 TB of storage.
- Reduced PostgreSQL server startup time from over 12 hours to less than 60 seconds.

Storage Reduction and Server Startup Time:

- Identified and removed 10 inactive replication channels, freeing up 30 TB of storage.
- Reduced PostgreSQL server startup time from over 12 hours to less than 60 seconds.

Missing Indexes:

- Implemented necessary indexes on the PostgreSQL server while closely monitoring the Kafka data pipeline to prevent disruptions.
- Coordinated with developers to ensure smooth integration of indexes without affecting data throughput.

PostgreSQL Query Level Tuning:

- Applied domain-specific knowledge to modify PostgreSQL queries, achieving performance improvements that surpassed previous Oracle DR response times.

Business Impact

Ahana's solutions led to measurable outcomes:

1) Startup Time: The PostgreSQL server startup time decreased from over **12 hours** to under **60 seconds**, enhancing business efficiency.

2) Storage: Freed up **30 TB** of storage, reducing operational overhead and improving system performance.

3) Query Performance: Achieved better performance for PostgreSQL queries compared to the previous Oracle system, ensuring seamless business operations.

Conclusion

Ahana delivered substantial improvements by addressing the performance issues of our client's PostgreSQL server. The enhancements in startup times, storage efficiency, and query performance resolved critical challenges and led to more efficient business operations. This project illustrates how targeted optimizations, and expert interventions can effectively improve database performance and support operational goals.

About Ahana Systems and Solutions

Ahana Systems & Solutions is a leading IT Infrastructure Management Services and Digital Transformation company based in Bengaluru, India. Our expertise extends to a wide range of solutions, including Cloud, RPA, DB & EDW, BI & Analytics, and Application Development. Our 100+ roster of clients relies on us for our deep domain expertise, skilled resource base, and proven partnership with the best technology providers.

Contact Us

sales@ahanait.com | info@ahanait.com | +91 9148724605